

MANAGEMENT OPTIONS FOR BUILDING FOREST RESILIENCE

Rob York

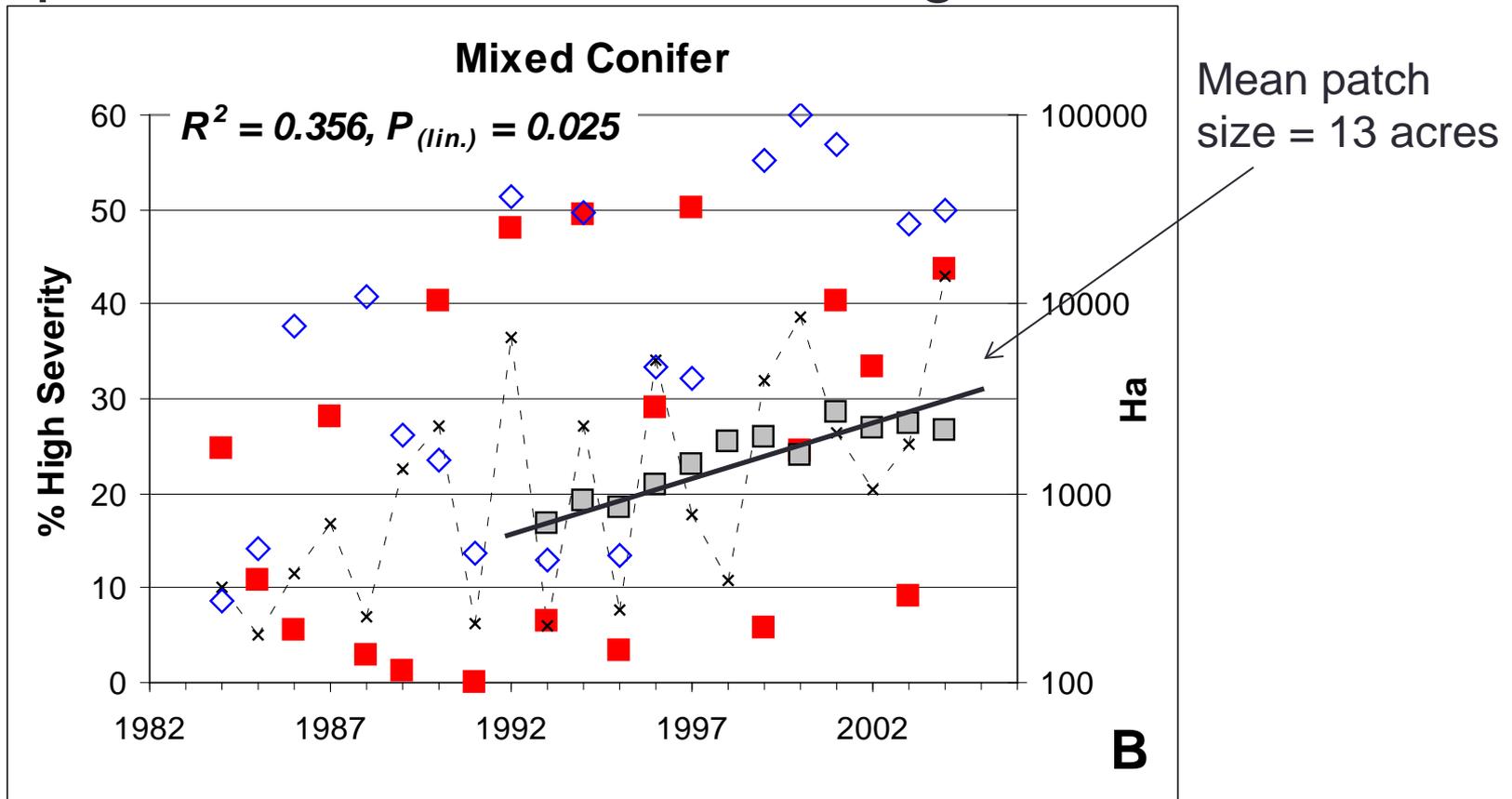
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MANAGEMENT OBJECTIVES

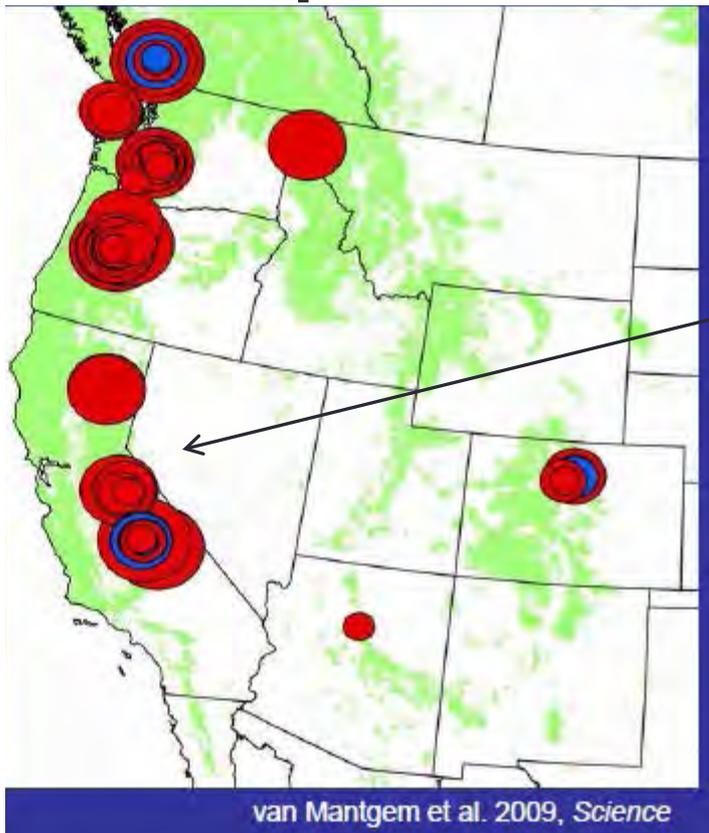
1. Reduce fire severity
2. Prepare forests for climate change



Miller et al. 2009; Trend in gray squares = increasing fire severity

MANAGEMENT OBJECTIVES

1. Reduce fire severity
2. Prepare forests for climate change



Background mortality has doubled over last few decades



Forest conversion to shrub/grassland

MANAGEMENT CHALLENGES

Climate change uncertainty



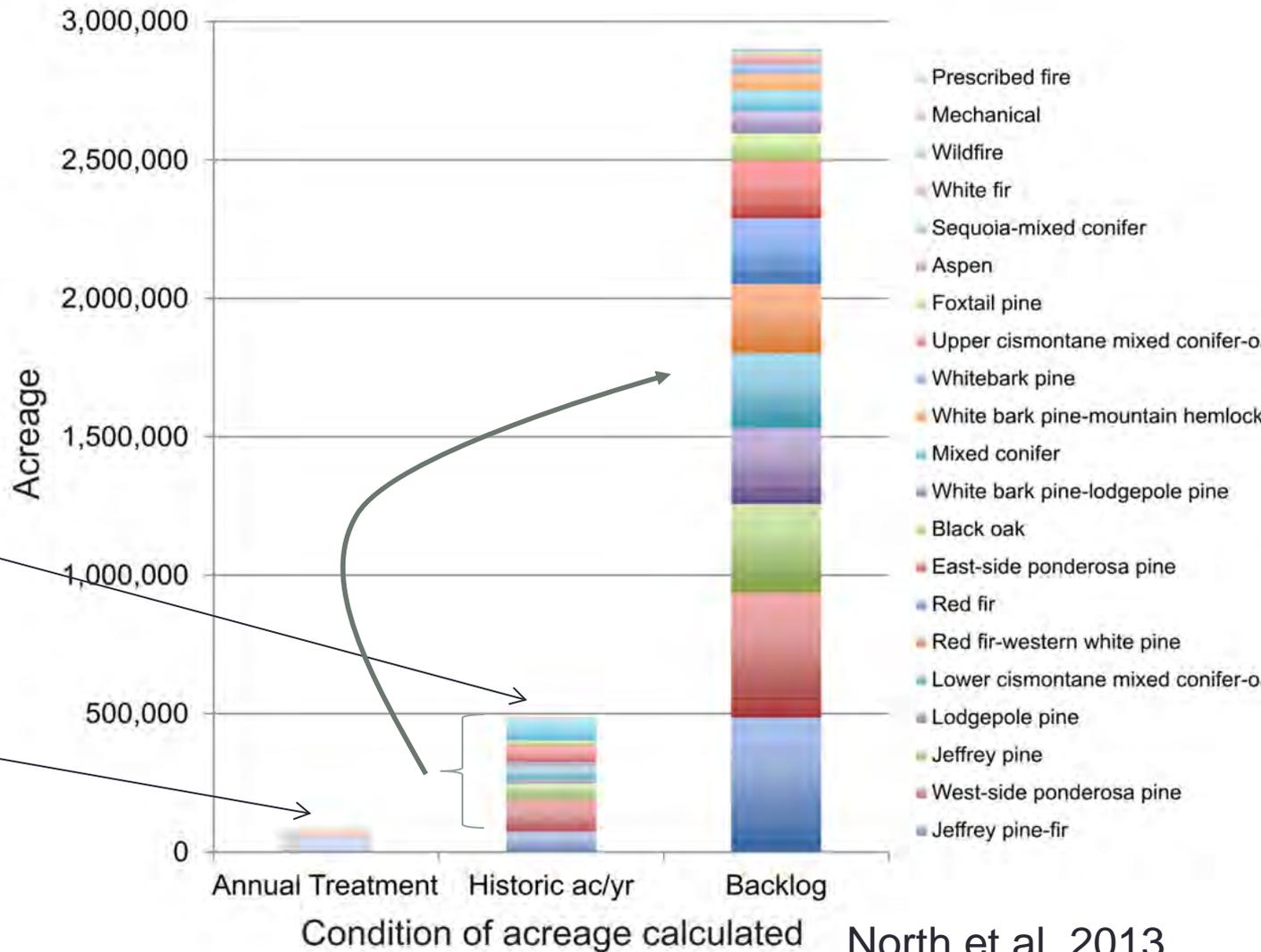
Structural reconstructions are not sufficient

MANAGEMENT CHALLENGES



MANAGEMENT CHALLENGES

Backlog on federal lands (a conservative estimate)



Area historically burned per yr

Area currently treated per yr

At this rate, 60% of fed lands will remain fuel loaded

MANAGEMENT CHALLENGES

The great firification of the 20th century

Uneven-aged silviculture /

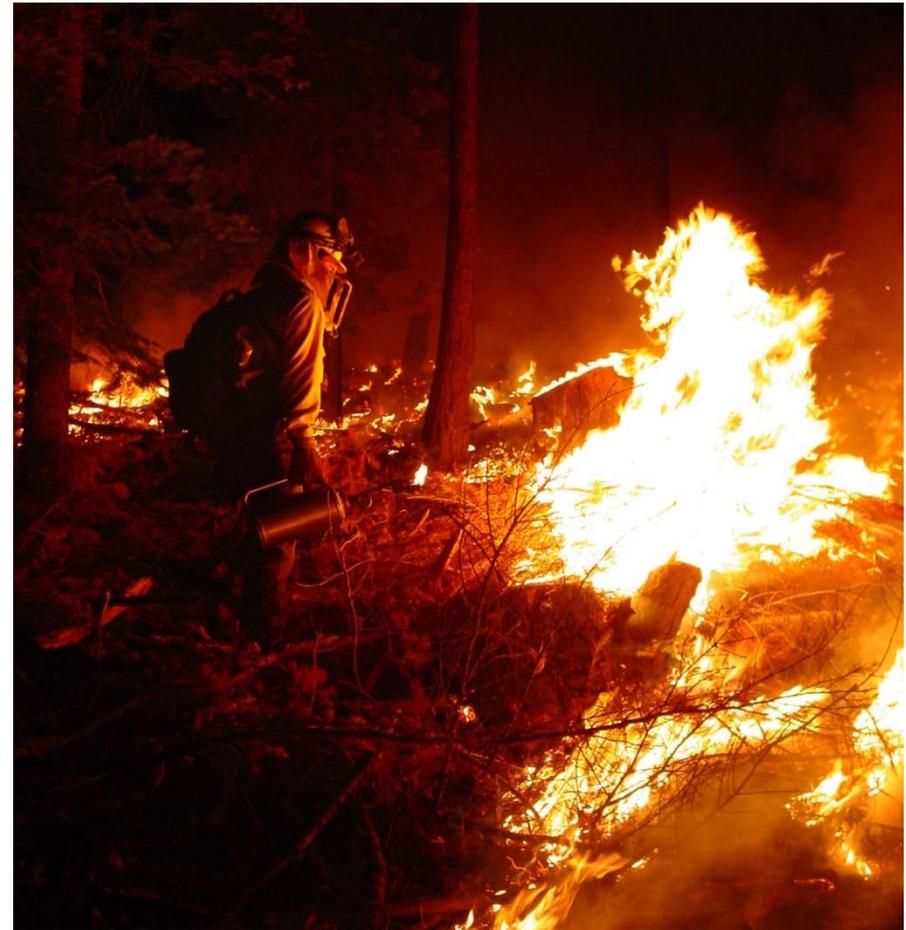
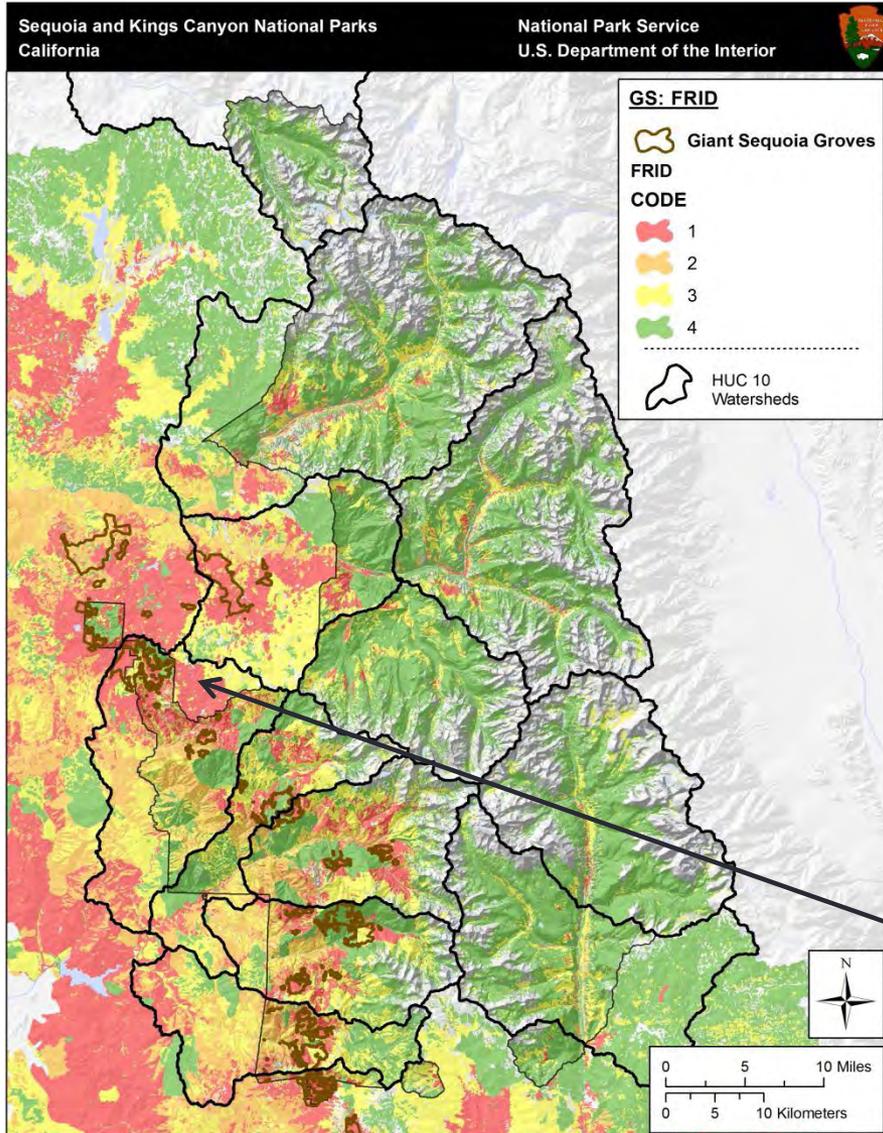
Partial harvests:

Need to manage **all size classes**



MANAGEMENT ALTERNATIVES

Prescribed fire: great when feasible



Even giant sequoia groves are extremely backlogged

York et al. 2013

Large yellow machines

MANAGEMENT ALTERNATIVES

Alter fuel



MANAGEMENT ALTERNATIVES

Remove fuel

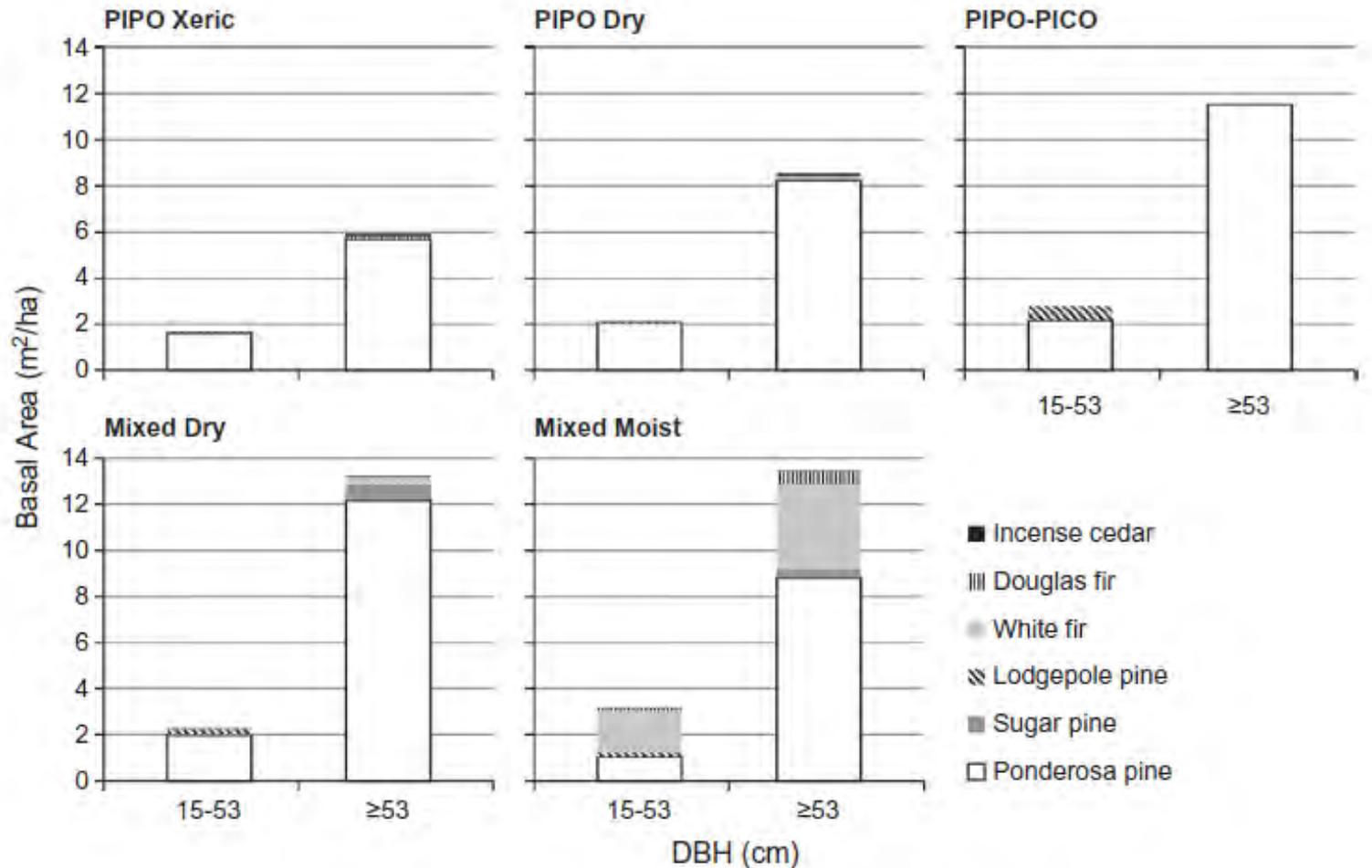
- Whole tree yarding
- Small tree yarding/piling



MANAGEMENT ALTERNATIVES

DENSITY MANAGEMENT and SPECIES COMPOSITION

Low density
Large trees
Mostly P. pine



Hedge your bets, don't lose yardage

MANAGEMENT ALTERNATIVES

Actively adapt



Diversity: as much in practice as in purpose

BLODGETT EXAMPLE

Wide structural gradient

- Even-aged
- Uneven-aged
- Reserves

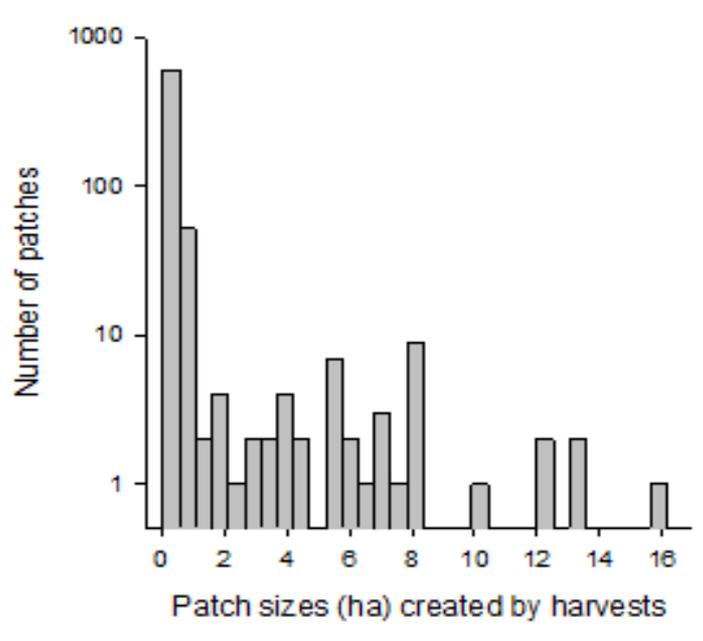
Density gradients
within each

Abandon as
needed (e.g. high
grading)

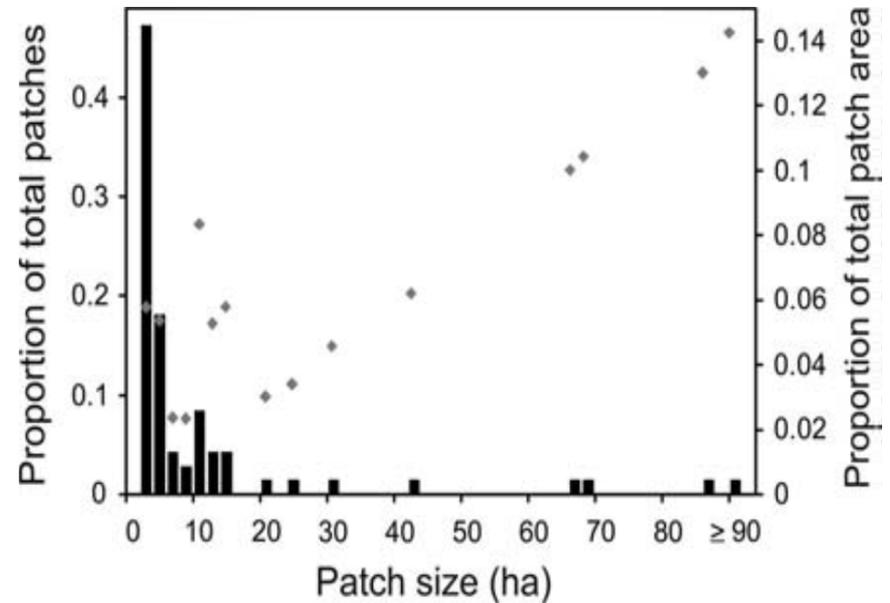


Compare structure with appropriate references

Harvest created gap distribution



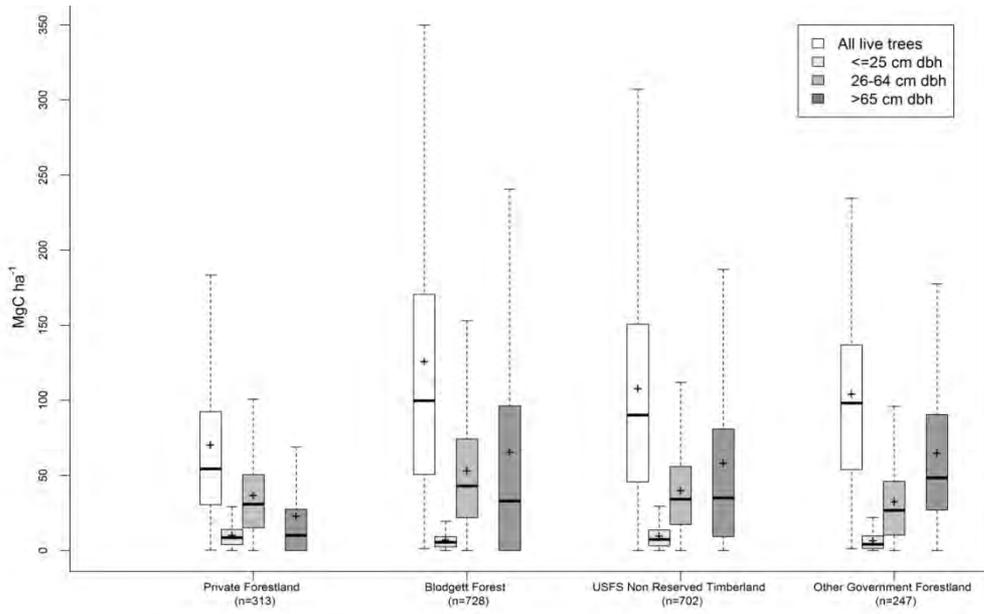
Natural fire-created gap distribution



Collins and Stephens 2010

Blodgett forest-wide stocking

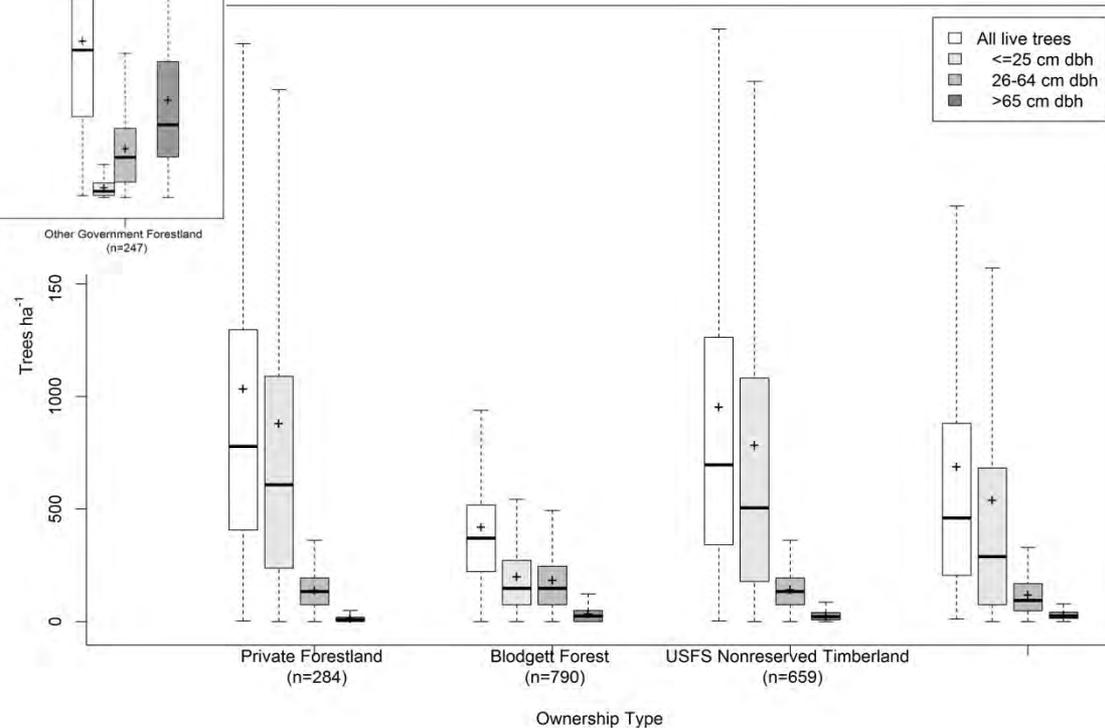
Stewart et al. In Prep



Even though we cut them...

Most stocking is in large trees

Density management of small and medium size trees



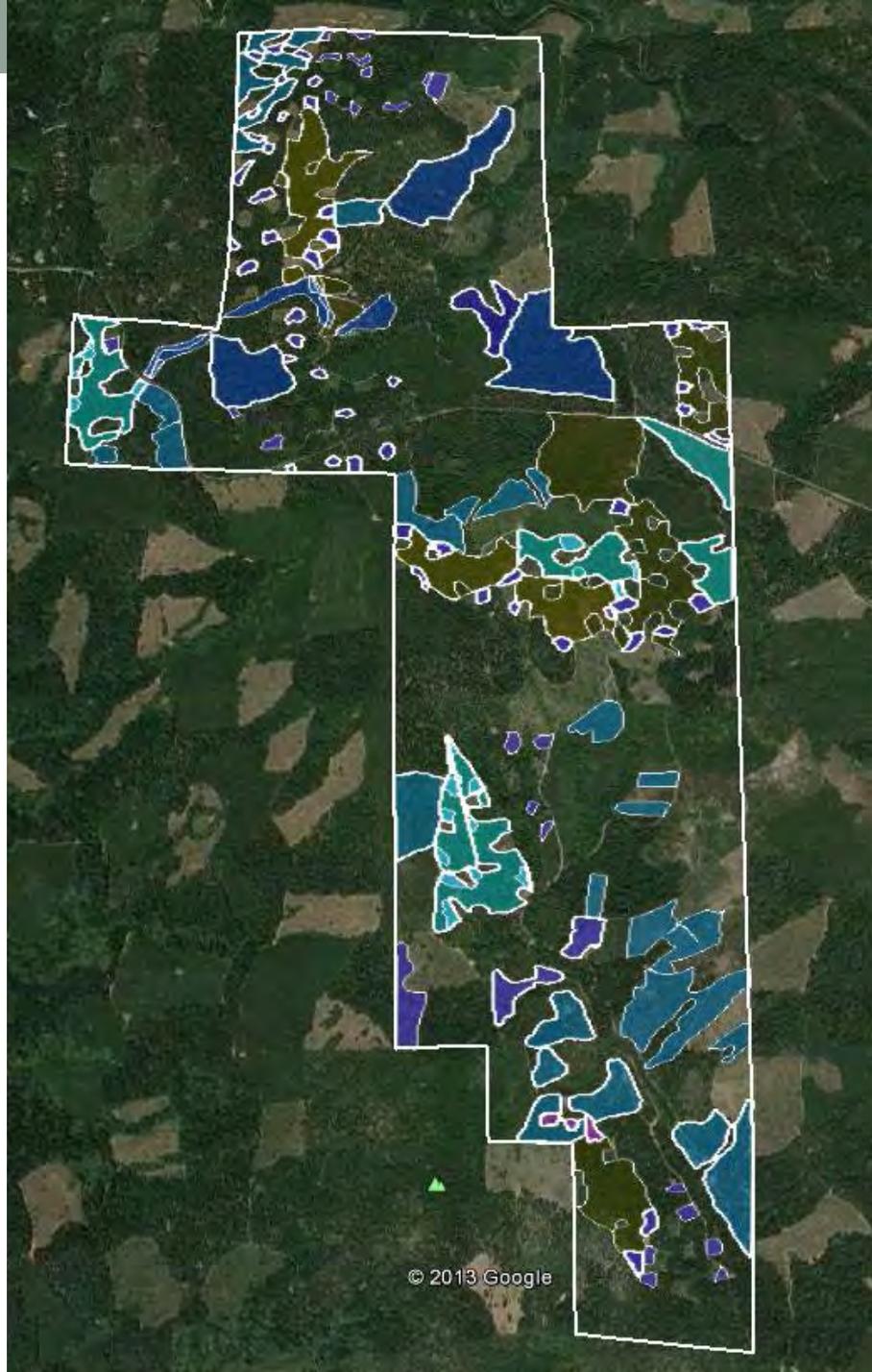
Ownership Type

Work on backlog

Treated areas within past 12 years:

- Rx burn
- Pile and burn
- Masticate
- Thin + whole tree yard

~20% backlog



Groveland District Office 8/20/13

Rim fire
8/19 – 500 acres
8/20- 10,000 acres



American Fire

8/20/13

16,000 acres

